

F. Melton

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- **Mapping past, present, and future climatic suitability for invasive *Aedes aegypti* and *Aedes albopictus* in the United States: a process-based modeling approach using CMIP5 downscaled climate scenarios**

The ongoing spread of the mosquitoes, *Aedes aegypti* and *Aedes albopictus*, in the continental United States leaves new areas at risk for local transmission of dengue, chikungunya, and Zika viruses. All three viruses have caused major disease outbreaks in the Americas with infected travelers returning regularly to the U.S. The expanding range of these mosquitoes raises questions about whether recent spread has been enabled by climate change or other anthropogenic influences. In this analysis, we used downscaled climate scenarios from the NASA Earth Exchange Global Daily Downscaled Projections (NEX GDDP) dataset to model *Ae. aegypti* and *Ae. albopictus* population growth rates across the United States. We used a stage-structured matrix population model to understand past and present climatic suitability for these vectors, and to project future suitability under CMIP5 climate change scenarios. Our results indicate that much of the southern U.S. is suitable for both *Ae. aegypti* and *Ae. albopictus* year-round. In addition, a large proportion of the U.S. is seasonally suitable for mosquito population growth, creating the potential for periodic incursions into new areas. Changes in climatic suitability in recent decades for *Ae. aegypti* and *Ae. albopictus* have occurred already in many regions of the U.S., and model projections of future climate suggest that climate change will continue to reshape the range of *Ae. aegypti* and *Ae. albopictus* in the U.S., and potentially the risk of the viruses they transmit.

#### Authors

- [Marisa Anne Pella Donnelly](#)
  - University of California Davis
- [Matteo Marcantonio](#)
  - Fondazione Edmund Mach
- [Forrest S Melton](#)
  - California State University Monterey Bay
- [Christopher M Barker](#)
  - University of California Davis